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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/676,095	10/02/2000	Hyun-doo Shin	Q56074	4859

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EXAMINER	
CHANG, JON CARLTON	
ART UNIT	**PAPER NUMBER**
2623	

DATE MAILED: 08/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/676,095	SHIN ET AL.	
	Examiner	Art Unit	
	Jon Chang	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-42 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) 4-7 and 11-42 is/are allowed.

6)☒ Claim(s) 1-3,8 and 10 is/are rejected.

7)☒ Claim(s) 5,7,9,15,17,19,21,23,31,33 and 40 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4, 5 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Specification

1. The disclosure is objected to because of the following informalities:

Throughout the specification, all of the occurrences of the term "Garbor" should read, "Gabor."

Appropriate correction is required.

Claim Objections

2. Claims 5, 7, 9, 15, 17, 19, 21, 23, 31, 33 and 40 are objected to because of the following informalities:

The term "Garbor" should read, "Gabor."

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by the article, "A Performance Evaluation of Texture Measures for Image Classification and

Segmentation Using the Cascade-Correlation Architecture" by Augusteijn et al. (hereinafter "Augusteijn").

Regarding claim 1, Augusteijn discloses a digital image texture analyzing method comprising the step of obtaining a texture descriptor including a mean of pixel values of an original image as a texture feature (page 4301, second paragraph under "Pixel Patterns and Gray Level Averages").

5. Claims 1-3 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by the article, "Myocardial Tissue Characterization by Means of Nuclear Magnetic Resonance Imaging" by Ravizzaa et al. (hereinafter "Ravizza").

Regarding claim 1, Ravizz discloses a digital image texture analyzing method comprising the step of obtaining a texture descriptor including a mean of pixel values of an original image as a texture feature (page 502, left column, second full paragraph).

As to claim 2, Ravizza discloses the the method according to claim 1, wherein the texture feature further includes a variance of the pixel values of the original image (page 502, left column, second full paragraph).

Regarding claim 3, the remarks provided for claim 2 are applicable.

In regards to claim 8, the remarks provided for claims 1 and 2 are applicable. Ravizza teaches an apparatus for performing the method (page 501, right column, section 2.1 Equipment).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Augusteijn.

Regarding claim 2, Augusteijn does not explicitly disclose that the texture feature further includes a variance of the pixel values of the original image. However, the article does teach utilizing the standard deviation of pixel values as a texture feature (page 4301, second paragraph under "Pixel Patterns and Gray Level Averages"). The variation is considered obvious over standard deviation taught by Augusteijn given that they are directly related.

With regard to claim 3, the remarks provided for claim 2 are applicable.

As to claim 8, the remarks provided for claims 1 and 2 are applicable. Augusteijn does not disclose an apparatus and associated units. However, the method taught by Augusteijn is intended to be performed on some sort of apparatus. Implementation of the method on such an apparatus would have been obvious and well within the skill level of the ordinary artisan.

9. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of the article, "Non-parametric Similarity Measures for Unsupervised Texture Segmentation and Image Retrieval" by Puzicha et al. (hereinafter "Puzicha") and Ravizza.

Regarding claim 10, Puzicha discloses a digital image searching method comprising searching for an image having a similar texture descriptor to a query image using a texture descriptor (page 267, right column, first full paragraph; section 3). Puzicha does not disclose that the texture descriptor has a mean and a variance of the pixel values of an original image as texture features. However, this is well known as evidenced by Ravizza (page 502, left column, second full paragraph). It would have been obvious to employ Ravizza's technique in Puzicha's method because it is accurate in identifying textures (Ravizza, page 504, left column, section 4.2), and due to its inherent simple computation.

10. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of the article, "Texture Features for Browsing and Retrieval of Image Data" by Manjunath et al. (hereinafter "Manjunath").

Regarding claim 10, Majunath discloses a digital image searching method comprising searching for an image having a similar texture descriptor to a query image using a texture descriptor (section 1, Introduction, second paragraph; section 2.4.1). Majunath does not disclose that the texture descriptor has a mean and a variance of the pixel values of an original image as texture features. However, this is well known as evidenced by Ravizza (page 502, left column, second full paragraph). It would have been obvious to employ Ravizza's technique in Majunath's method because it is accurate in identifying textures (Ravizza, page 504, left column, section 4.2), and due to its inherent simple computation.

Allowable Subject Matter

11. Claims 4-7, 11-42 are allowed.

12. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

References Cited

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 6,192,150 to Leow et al. discloses an invariant texture matching method for image retrieval which utilizes a Gabor filter bank, each filter having a different center frequency and orientation.

U.S. Patent 6,424,741 to Shin et al. discloses an apparatus for analyzing image texture and method. The patent teaches use of Gabor filtering at different scales and orientations, and utilizing the mean and variance of filtered images.

"Classification of Rotated and Scaled Textures by Local Linear Operators" by Lam et al. teaches the use of the mean and variance of the 2D convolution of an image and the kth zero-sum operator, as a texture energy feature.

"A Comparison of Wavelet Transform Features for Texture Image Annotation" by Ma et al. teaches utilizing the Gabor wavelet in a matching metric to retrieve images from a database based on texture features.

"Orientation- and Scale-Invariant Recognition of Textures in Multi-Object Scenes" by Teuner et al. teaches the use of a Gabor filter bank.

"Texture Image Segmentation Method Based on Wavelet Transform and Neural Networks" by Zhang et al. teaches using the mean and variance of wavelet coefficients (i.e., of the filtered images) for texture measures.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jon Chang whose telephone number is (703)305-8439. The examiner can normally be reached on M-F 8:00 a.m.-6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703)308-6604. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.

Jon Chang
Primary Examiner
Art Unit 2623

Jon Chang
August 19, 2003